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TITLE: METHOD FOR IDENTIFYING THE IDENTITY OF A GROWING OR GROWN CROP IN A FIELD LOCATION

BACKGROUND OF THE INVENTION

Research plots for field crops are normally set up in a grid style layout comprised of a plurality of short rows of crops located in a plurality of ranges distributed across an x-y grid. Plot numbers or identifiers are assigned to each corresponding plot in the field. It is important for the research scientist to observe individual ranges, individual rows, and sometimes even individual plants. It is sometimes very difficult for the research scientist to know which exact plot or plant is being observed. It is critical to know this information when notes are taken so that the corresponding data is correctly associated. Plot location is also very important at harvest. This is the final data retrieved from the field and it must correlate properly in the database for the field which is commonly used.

Some use of global positioning systems ("GPS") have been used to alleviate some of the problems of identification, however, the use of GPS has not been perfected to accommodate all of the needs of the research scientist in observing the growing and grown crops to gather the necessary data which the research requires.

It is therefore a principal object of this invention to use a GPS in conjunction with the planting process to permit a research scientist to specifically identify individual plants, rows, ranges and the like in gathering research data from the growing crop.

A further object of this invention is to use this GPS data at any time the scientist is in the field taking notes while the crop is growing, or during the harvest operation.

It is a further object of this invention to use a GPS data gathering system which will reduce the possibility of data corruption due to location error.

These and other objects will be apparent to those skilled in the art.

SUMMARY OF THE INVENTION

A GPS receiver is mounted on the planter to provide data on the plot start location. When the planter trip signal is received by the controller computer, it requests the longitude and latitude from the GPS receiver for the individual seed planted in a given row. This data is stored with the plot identifier. Each time a new plot starts, the data is recorded so that the entire grid is mapped out in start locations. During note taking or harvest, a GPS receiver is used to provide current longitude and latitude that the computer will look up in the data file and correlate to a particular plot identifier. Once the computer has matched the proper plot identifier, the note or harvest data can then be recorded with the proper plot identifier.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view of a research field for row crops;

Fig. 2 is an enlarged scale perspective view of the area outlined by lines 2-2 in Fig. 1;

Fig. 3 is an enlarged scale perspective view of a planter used to plant the field in Figure 1; and

Fig. 4 is a schematic diagram showing the implementation of the method of this invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The numeral 10 designates a research field in which row crop seeds are planted for research purposes. The planting locations of each seed planted is designated by the numeral 12, and the plants resulting from the subsequent germination of the seeds are designated by the numerals 14.

The field 10 is divided into a plurality of plots 16 which are comprised of a plurality of parallel rows 17. The plots are located in a series of parallel ranges 18 which are separated by laterally extending alleys 20 (geometrically in an "x" direction) and a series of longitudinal alleys 22 (geometrically in a "y" direction). Alleys 20 and 22 are typically at right angles to each other.

When the field 10 is planted, a conventional farm tractor 24 and a research planter 26 are used. Separate packets of seed are typically planted in each row 17 in each plot 16. The planter 26 includes a computer 28 which is operatively connected by conventional means to a GPS receiver 30 so that as each seed is deposited in the soil of a row, a global position of the planted seed is instantaneously determined. This data is entered in the memory of computer 28 along with the range number of the plot, the number of the plot, the number of the row of the plot, and the number ("A", "B", "C",. . . "F" - Fig. 4) of the seed in the row, all with an identification of the seed that was planted at the identified location.

The research planter 26 can have a sensor (not shown), e.g., a photocell, to monitor the dropping of each seed whereupon a signal is transmitted to the computer 28 or GPS 30 to trigger a location reading to be stored in the memory of the computer. More specifically, when the first plot is manually tripped, the computer 30 uses vector information and determines the next tripping location. The computer 30 has a program that allows entry of data as to the row length and alley width so that the system could calculate the next plot location from the original planter trip. An additional parameter is entered into the program to include the number

of trips needed to make a pass across the field and the number of passes that would be needed to complete the planting grid. This system maintains accuracy to around 2 inches. Systems other than GPS could be used to attain this information. Examples would be radio, sonar or laser. Longitude and latitude on earth are not fully needed for this function. Displacement or distance from the original location is what will drive the tripping.

After the plants 14 have emerged, or when the plants have matured and harvesting is imminent, the research scientist 32 (Fig. 4) will examine the field and will, among other things, visually examine the plants in the field to find plants with characteristics that are the object of the research being conducted. Upon finding a plant 14 upon which data is to be gathered, (e.g. plant "F" - Fig. 4) the scientist will place a GPS receiver 34 over or adjacent to the plant in question. The longitude or latitude of that plant will be determined, and then transmitted either by signal to a remotely located PC 36, (which also could be a hand-held PC) in which is stored the planting location data described above taken when the field was planted. The incoming longitude and latitude for GPS receiver 34 will be matched with the similar reading stored in PC 36 whereupon the person 32 will have access to the data on plant F for entry in the field notes.

It is therefore seen that the foregoing method will permit accurate and immediate access to the full data, including location and identification, of any given plant in a research field of any size as the scientists observe and evaluate the plants while they are growing or after they matured. This achieves all the objectives of this invention.